Food Safety and Biosensors

Biosensors are being pursued by the military as field-portable, real-time instruments to detect and identify pathogenic microorganisms from complex food materials. Biosensors originated from the integration of molecular biology with information technology, i.e. microcircuits, optical fibers, etc. The principle makes use of information technology to qualify or quantify parameters of biomolecule-analyte reactions.

Why is it Needed?

Biosensor systems will provide military food inspectors with a tool capable of rapid detection of pathogens and potential contaminates to include CB agents. This will result in significant improvements in food safety, significantly reducing acute and chronic health risks.

Technology:

A number of technologies are being investigated and validated to include electrochemiluminescence, electrochemical, fiber-optic, and chemiluminescence based systems. Molecular recognition element technologies are also being pursued to include antibodies, peptides and aptamers as well as volatile organic metabolites specific to target pathogens. Strategies are being developed to incorporate for surface screening technologies that will allow a greater number of random food samples to be tested. This program will serve as a platform for future technology insertions.

Key Features / Benefits:

These biosensor technologies will result in a field portable kit to provide rapid, real-time analysis of combat rations in remote locations, fixed field-feeding sites, and military dining facilities insuring the safety of the warfighter. It will reduce labor, time and cost required for food safety testing.

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